

WHAT IS CLAIMED IS:

1. An article of manufacture comprising:
a first container containing a liquid phase, the liquid phase
comprising:
5 peroxidic species or reaction products resulting from
 oxidation of an alkene by a mixture of ozone and oxygen,
 wherein the alkene has less than about 35 carbons;
 a penetrating solvent; and
a second container containing a solid phase, the solid phase
10 comprising:
 a dye containing a chelated divalent or trivalent metal;
 and
 an aromatic redox compound.
2. The article of manufacture of claim 1, wherein the alkene
15 comprises an open-chain unsaturated hydrocarbon, a monocyclic unsaturated
 hydrocarbon, or a bicyclic unsaturated hydrocarbon.
3. The article of manufacture of claim 1, wherein the alkene
 comprises an open-chain unsaturated hydrocarbon, a monocyclic unsaturated
 hydrocarbon, or a bicyclic unsaturated hydrocarbon.
- 20 4. The article of manufacture of claim 1, wherein the alkene
 comprises an open-chain unsaturated alcohol, a monocyclic unsaturated alcohol,
 or a bicyclic unsaturated alcohol.
5. The article of manufacture of claim 1, wherein the alkene is an
 hydroxyl-containing alkene.
- 25 6. The article of manufacture of claim 1, wherein the alkene is in a
 liquid form, in a solution, or in a dispersion.

17. The article of manufacture of claim 1, wherein the dye can be activated by an energy.

18. The article of manufacture of claim 1, wherein the dye comprises porphyrin or rose bengal.

5 19. The article of manufacture of claim 1, wherein the dye comprises chlorophyllin, hemin, corrins, texaphrin, methylene blue, hematoxylin, eosin, erythrosin, lactoflavin, anthracene dye, hypericin, methylcholanthrene, neutral red, or fluorescein.

10 20. The article of manufacture of claim 16, wherein the energy comprises photon or electroporation pulse.

21. The article of manufacture of claim 13, wherein the energy comprises laser, ionizing radiation, phonon, electrical pulse, magnetic field, plasma pulse, gravitational pulse, or continuous flow excitation.

15 22. The article of manufacture of claim 1, wherein the metal comprises iron.

23. The article of manufacture of claim 1, wherein the metal comprises copper, manganese, tin, magnesium, or strontium.

24. The article of manufacture of claim 1, wherein the aromatic redox compound comprises benzoquinone or naphthoquinone.

20 25. The article of manufacture of claim 1 further comprising an electron donor.

26. The article of manufacture claim 24, wherein the electron donor comprises ascorbic acid or a pharmaceutical salt thereof.

25 27. The article of manufacture of claim 24, wherein the electron donor comprises plasma, electrical current or germanium sesquioxide.

28. An article of manufacture comprising:
a first container containing a liquid phase, the liquid phase
comprising:
5 peroxidic species or reaction products resulting from
oxidation of a hydroxyl-containing alkene by a mixture of
ozone and oxygen, wherein the hydroxyl-containing
comprises α -terpineol, citronellol, nerol, linalool, phytol,
geraniol, perillyl alcohol, menthol, geranylgeraniol or
farnesol alkene by a mixture of ozone and oxygen; and
10 a penetrating solvent, wherein the penetrating solvent
comprises dimethylsulfoxide, sterol, lecithin, propylene
glycol, or methylsulfonylmethane; and
a second container containing a solid phase, the solid phase
comprising:
15 a dye containing a chelated divalent or trivalent metal,
wherein the dye comprises porphyrin, rose bengal,
chlorophyllin, hemin, corrins, texaphrin, methylene blue,
hematoxylin, eosin, erythrosin, lactoflavin, anthracene
dye, hypericin, methylcholanthrene, neutral red, or
20 fluorescein; and
an aromatic redox compound, wherein the redox compound
comprises benzoquinone or naphthoquinone.

29. The article of manufacture of claim 27 further comprising an
electron donor.

30. The article of manufacture of claim 28, wherein the electron
donor comprises ascorbic acid or a pharmaceutical salt thereof.

31. A method for treating a patient with coronary arteriosclerosis comprising:

administering to the patient an effective amount of a pharmaceutical formulation comprising:

peroxidic species or reaction products resulting from oxidation of an alkene by an oxygen-containing oxidizing agent, wherein the alkene has less than about 35 carbons;

a penetrating solvent;

a dye containing a chelated divalent or trivalent metal; and

an aromatic redox compound.

32. The method of claim 30, wherein the alkene comprises an open-chain unsaturated hydrocarbon, a monocyclic unsaturated hydrocarbon, or a bicyclic unsaturated hydrocarbon.

33. The method of claim 30, wherein the alkene comprises an open-chain unsaturated alcohol, a monocyclic unsaturated alcohol, or a bicyclic unsaturated alcohol.

34. The method of claim 30, wherein the alkene is a hydroxyl-containing alkene.

35. The method of claim 30, wherein the alkene is in a liquid form, in a solution, or in a dispersion.

36. The method of claim 30, wherein the alkene comprises an isoprenoid.

37. The method of claim 35, wherein the isoprenoid comprises α -terpineol, citronellol, nerol, phytol, perillyl alcohol, menthol, linalool, geranylgeraniol, geraniol, or farnesol.

38. The method of claim 35, wherein the isoprenoid comprise myricene, citrillene, citrala, pinene, or limonene.

39. The method of claim 30, wherein the alkene comprises fixed oil-, ester-, fatty acid-, or ether-containing olefin.

5 40. The method of claim 30, wherein the oxygen-containing oxidizing agent comprises singlet oxygen, oxygen in its triplet state, superoxide anion, periodate, hydroxyl radical, peroxide, or oxygen bound to a transition element.

10 41. The method of claim 30, wherein the oxygen-containing oxidizing agent comprises ozone.

42. The method of claim 30, wherein the penetrating solvent is a liquid, micelle membrane, emollient, plasma, or vapor.

43. The method of claim 30, wherein the penetrating solvent is dimethylsulfoxide.

15 44. The method of claim 30, wherein the penetrating solvent is polyvinylpyrrolidone or a pH-buffered saline.

45. The method of claim 30, wherein the penetrating solvent is aqueous solution, fats, sterols, lecithins, phosphatides, ethanol, propylene glycol, or methylsulfonylmethane.

20 46. The method of claim 30, wherein the dye comprises porphyrin or rose bengal.

25 47. The method of claim 30, wherein the dye comprises chlorophyllin, hemin, corrins, texaphrin, methylene blue, hematoxylin, eosin, erythrosin, lactoflavin, anthracene dye, hypericin, methylcholanthrene, neutral red, or fluorescein.

48. The method of claim 30, wherein the metal comprises iron.

49. The method of claim 30, wherein the metal comprises copper, manganese, tin, magnesium, or strontium.

50. The method of claim 30, wherein the aromatic redox compound
5 comprises benzoquinone or naphthoquinone.

51. The method of claim 30 further comprising an electron donor.

52. The method of claim 30, wherein the electron donor comprises ascorbic acid or a pharmaceutical salt thereof.

53. A method for treating a patient with coronary arteriosclerosis
10 comprising:

administering to the patient an effective amount of a
pharmaceutical formulation comprising:

peroxidic species or reaction products resulting from oxidation of
a hydroxyl-containing alkene by a mixture of ozone and oxygen, wherein the
15 hydroxyl-containing comprises α -terpineol, citronellol, nerol, linalool, phytol,
geraniol, perillyl alcohol, menthol, geranylgeraniol or farnesolalkene by a
mixture of ozone and oxygen;

a penetrating solvent, wherein the penetrating solvent comprises
dimethylsulfoxide, sterol, lecithin, propylene glycol, or methylsulfonylmethane;

20 a dye containing a chelated divalent or trivalent metal, wherein
the dye comprises porphyrin, rose bengal, chlorophyllin, hemin, corrins,
texaphrin, methylene blue, hematoxylin, eosin, erythrosin, lactoflavin,
anthracene dye, hypericin, methylcholanthrene, neutral red, or fluorescein; and

25 an aromatic redox compound, wherein the redox compound
comprises benzoquinone or naphthoquinone.

54. The method of claim 52 further comprising an electron donor.

55. The method of claim 53, wherein the electron donor comprises ascorbic acid or a pharmaceutical salt thereof.

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